I. **Population Estimate of Humpback Chub in Black Rocks.**

II. Principal Investigator(s):

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III. Project Summary:

Robust population estimates are now critical to monitor recovery of the humpback chub population (USFWS 2001). Recovery goals require estimates of population size at regular intervals to measure population response to management activities under the Recovery Program. A population estimate was made for the 1998–2000 time period (McAda 2002). This report summarizes the work begun towards a second estimate of population size for humpback chub in Black Rocks.

IV. Study Schedule: FY 2003 to FY 2005

V. Relationship to RIPRAP: Colorado River Action Plan: Mainstem; V.C. Estimate humpback chub populations; V.C.1. Black Rocks

VI. Accomplishment of FY 2004 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Sampling for this study is conducted in September and October; therefore sampling overlaps two fiscal years. Sampling in calender year 2003 overlapped into FY 2004 and sampling in calender year 2004 overlapped into FY 2005. Data analysis for 2003 was conducted in FY 2004 and data analysis for 2004 and the final report will be completed in FY 2005. Therefore, this report will be segregated into calender years 2003 and 2004.

2003

Four sampling trips were conducted in September and October. The last sampling trip was made during the final week of October.

Electrofishing was used more heavily than in the past. The entire Black Rocks reach was

sampled with electrofishing during one early morning and one evening of each trip. This meant that trammel nets could not be set for those time periods. Electrofishing did capture quite a few roundtail chubs and a few humpback chubs. Also different sizes of trammel nets were used to attempt to minimize stress to the fish and capture a different size of fish. Trammel nets with 0.5-in inner mesh were used with mixed results. Smaller fish were collected, but catch rate was considerably less than with 1-in inner mesh. Fewer nets were set overall to minimize the time between net checks. Attempts were made to keep net sets to 1 to 1.25 hr long, which met that fewer nets could be run at one time.

A total of 70 individual humpback chubs were captured during the investigation. Five of those fish were subsequently recaptured; one within the same sampling rotation and four in different sampling rotation. In addition, twelve of the humpback chubs captured had been tagged in previous years.

A population estimate for 2003 was calculated and presented at the September Workshop. The estimates for different models calculated from program capture are presented below. Confidence intervals were wide and the coefficient of variation (CV) and phat were not what were desired under the recommendations for population goals developed by the Fish and Wildlife Service.

Model	Estimate	95% CI	CV	P-hat
Mo	478	221-1,176	0.46	0.04
Darroch Mt	450	211-1,093	0.46	0.04
Chao Mt	365	184-834	0.42	0.05
Chao Mh	597	259-1,538	0.50	0.03
Chao Mth	475	210-1,244	0.50	0.04

Population structure was similar to previous years (see figure in appendix).

2004

Four different sampling trips were made in fall 2004 — September (14–17; 27–30) and October (12–15; 26–29). Sampling protocol was similar to 2003. Sampling was primarily done with trammel nets set for 1 to 1.5 hr periods. However, electrofishing was used at least twice during each sampling trip to capture smaller chubs and to sample areas that could not be effectively sampled with trammel nets. Most humpback chubs were captured with trammel nets. Electrofishing was most effective for roundtail chubs, but some humpback chubs were collected.

Because sampling has just been completed, data analysis has not yet begun. Data have been computerized, but no analysis has been done. A total of 77 individual humpback chubs were collected. Unfortunately, only one humpback was recaptured within the study period. However, 22 humpback chubs were recaptured that had been tagged in previous years.

VII. Recommendations: Complete report writeup as described in scope of work.

II Project Status: Project is ongoing and on track

IX. FY Budget:
A. Funds Provided: 44,615
B. Funds Expended:44,615
C. Difference:-0-
D. Percent of the FY 2004 work completed, 100%
E. Recovery Program funds spent for publication charges:-0-

X. Status of Data Submission: PIT tag numbers and data associated with stocked fish have been submitted to the data base.

XI. Signed: Chuck McAda 11/8/04

APPENDIX: